

REMARKS/ARGUMENTS

A. Rejection of Claims Under 35 U.S.C. § 102

Pending claims 1-9, 11-14, 17-21, 23, 25 and 26 stand rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,742,621 (Amon). Applicant respectfully traverses the rejection. With respect to claims 1 and 21, Amon does not disclose "a butterfly coprocessor coupled to the digital signal processor to perform an operation scheduled by the digital signal processor". In this regard, the Office Action states that the digital signal processor of Amon is all of data processing system 20 shown in FIG. 1 of Amon. Office Action, p. 4. As such, the program control unit 46 of Amon (contended by the Office Action to be the "butterfly processor") is part of the digital signal processor and is thus not coupled thereto.

More so, the Office Action relies on col. 6, lns. 11-16 of Amon to support the contention that program control unit 46 is a butterfly coprocessor. However, this portion of Amon merely states that a control circuit within arithmetic logic unit 54 performs control functions for the ALU in response to instructions received from program control unit 46. Amon, 6:10-16. Thus, to the extent that butterfly operations are performed, they are performed in arithmetic logic unit 54, which is part of the DSP. For this further reason, there is no butterfly coprocessor coupled to a DSP.

For at least these reasons, claim 1 and claims 2-9 and 11-12 depending therefrom and claim 21 and claims 23, 25, and 26 depending therefrom are patentable over Amon.

Dependent claim 6 is further patentable, as nowhere does Amon disclose registers in an arithmetic unit addressable by a data address generator. In this regard, address generation unit 36 of Amon is coupled to address buses 56-59 and is used to

provide addressing modes for the DSP. Amon, 4:5-15. Nowhere however does Amon disclose that the address generation unit 36 addresses registers in ALU 54.

Dependent claim 7 is further patentable, as nowhere does Amon disclose a butterfly coprocessor that includes a plurality of butterfly units. In this regard, the operation of Amon cited by the Office Action (col. 6, lns. 55-58) is not performed in program control unit 46, but rather in ALU 54, a single unit. For this further reason, claim 7 and claims 8-12 depending therefrom are patentable over Amon.

Dependent claim 10 is further patentable as nowhere does Amon disclose that a plurality of butterfly units performs approximations of logarithmic sum exponential operations, and certainly does not disclose such operations performed at the direction of a DSP.

Dependent claims 23, 25, and 26 are further patentable, as claim 23 depends from 22 and claims 25 and 26 depend from claim 24. Because claims 22 and 24 are not rejected under § 102, the §102 rejection of claims 23, 25, and 26 is improper.

With respect to claims 13 and 19, nowhere does Amon disclose "simultaneously computing two or more path metrics for the stage based upon the branch metrics." In this regard Applicant respectfully disagrees that Amon "teaches simultaneously computing two or more path metrics (PM1 and PM2) based upon the branch metrics (blocks 101-103) in Figure 3..." Office Action, p. 3. Instead, in Amon the path metrics are not simultaneously computed, as the path metrics are computed at different steps and at different times. Amon merely states that a second previous path metric is reloaded into a register while a path metric is determined. This does not disclose simultaneously computing two or more path metrics. For at least

this reason, claim 13 and claim 14 depending therefrom and claim 19 and claim 20 depending therefrom are patentable over Amon.

For similar reasons, claim 17 is patentable over Amon, as nowhere does Amon disclose simultaneously calculating new path metrics for each node of a stage of a trellis diagram. Thus for at least this reason, claim 17 and claim 18 depending therefrom are patentable over Amon.

B. Rejection of Claims Under 35 U.S.C. § 103(a)

Claims 15, 16, 22 and 24 stand rejected under 35 U.S.C. § 103(a) over Amon in view of U.S. Patent No. 5,796,757 (Czaja). Applicant respectfully traverses the rejection. As discussed above, Amon does not teach or suggest simultaneously computing two or more path metrics. Nor does Czaja. Accordingly, claims 15 and 16 which depend from claim 13 are patentable over the proposed combination.

Dependent claim 16 is further patentable as neither Amon nor Czaja teach or suggest allocating a butterfly unit for each branch extending from a node. In this regard, the portions of ALU 54 recited by the Office Action (Office Action, p. 9) do not make up a butterfly unit for each branch extending from a node. For this further reason, claim 16 is further patentable.


With regard to claims 22 and 24, neither Amon nor Czaja teach or suggest a butterfly coprocessor coupled to a digital signal processor to perform an operation scheduled by the digital signal processor. Accordingly, claims 22 and 24 depending from claim 21 are patentable over the proposed combination. Claim 24 is patentable for the further reason discussed above as to claim 16.

In view of these remarks, the application is now in condition for allowance and the Examiner's prompt action in accordance therewith is respectfully requested. The

Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 20-1504.

Respectfully submitted,

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